DEPARTMENT OF FORESTRY AND FIRE PROTECTION
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To: **State Board of Fire Services**

From: Kevin Conant, Fire Service Training Specialist III, State Fire Training

SUBJECT/AGENDA ACTION ITEM:
FSTEP Incident Management of High Rise Fires (2016)

Recommended Actions:
Informational only

Background Information:
The concept of developing FSTEP courses from SFT legacy curriculum and/or developing new curriculum for the purpose of continuing education and professional development was approved by STEAC on April 18, 2014. Accordingly, stakeholders identified the need to update the legacy course, Fire Command 2C, High-rise Fire Fighting Tactics (1995) with an Incident Management of High Rise Fires (2016) course.

Therefore, a cadre of experienced subject matter experts with extensive high rise firefighting experience, including several members of the FIRESCOPE High Rise specialty group were selected from various agencies and backgrounds in the mission to update the content into a new FSTEP course.

Cadre Leadership:
Kevin Conant, Battalion Chief (ret), Laura Garwood Meehan, Cadre Editor, Sacramento State.

Development Cadre Members
Jason Cardenas, Fire Captain, County of Los Angeles Fire Department; Jeff Gillette, Battalion Chief, Colton/Loma Linda Fire Department; Nicol Juratovac, Battalion Chief, San Francisco Fire Department; Gerry Laird, Battalion Chief, San Jose Fire Department; Demond Simmons, Battalion Chief, Oakland Fire Department; Tom Siragusa, Assistant Chief, San Francisco Fire Department; Charles Tobias, Battalion Chief, Fresno Fire Department; Surgey "Guy" Tomlinson, Battalion Chief, Los Angeles Fire Department; Jack Wise, Battalion Chief, Los Angeles Fire Department.

Several of the cadre members are SFT Registered Instructors and all have extensive operational experience with high rise incidents, and three of the cadre members are on the FIRESCOPE High Rise specialty group. Because this is a FSTEP Course Plan, the development of a Certification Training Standards (CTS) was not required. The majority of the Terminal Learning Objectives (TLO's) and the supporting Enabling Learning Objectives (ELO) were developed from ICS-HR-120-1 High-Rise Structure Fire Operational System Description; ICS-HR-222-1 Lobby Control Unit Leader—High-Rise Incident; ICS-HR-222-2 Systems Control Unit Leader—High-Rise Incident; ICS-HR-222-3 Staging Area Manager—High-Rise Incident; ICS-HR-222-4 Base Manager—High-Rise Incident; ICS-HR-222-5 Rapid-Ascent Team Leader—High-Rise Incident; ICS-HR-222-6 Rapid Intervention Group Supervisor—High-Rise Incident; ICS-HR-222-7 Evacuation Group Supervisor—High-Rise Incident; ICS-HR-222-8 Ground Support Unit Leader—High-Rise Incident; FIRESCOPE ICS 420-1, Field Operations Guide; and FIRESCOPE ICS 500, Structure Fire Operations.

Additionally, NFPA Standards 1021, 1407, 1500, 1521 and 1561 aided as supporting documents when creating the Course Plan.

The breakdown of the **40-hour** FSTEP course is as follows:

Incident Management of High Rise Fires	
Lecture/Didactic	17:30 Hours:Minutes
Activities/Simulations	19:30 Hours:Minutes
Testing	3:00 Hours:Minutes

Analysis/Summary of Issue:
Following is an analysis of this new FSTEP course:

1. The NFPA 1021 Standard for Fire Officer Professional Qualifications (2014) does not specifically address the job performance requirements of high-rise fire incident management. Therefore, SFT did not include it in the Certification Standard for Company Officer or Chief Fire Officer. Consequently, stakeholders requested staff to update the legacy Fire Command 2C, High-rise Fire Fighting Tactics (1995) curriculum by creating a new FSTEP course to include operational level training for high-rise incident management, aligning with the work of the FIRESCOPE ICS High Rise specialty group.

2. This course provides aspiring and incumbent Company Officers and Chief Officers with the knowledge, skills, and abilities required for managing incidents occurring in large, multistory buildings. These incidents may present significant management, logistical, and safety challenges to emergency personnel. The size and complexity of the interior spaces; limited, sometimes arduous access; extended travel and response times; and the concentrated occupant load with egress challenges all contribute to the problems faced by emergency responders. Additionally, most high-rise structures are equipped with various environmental, fire protection, and life-safety systems that require support and control. Successful emergency operations in these types of buildings also require preplanning and technical competence on the part of the emergency responders.

3. This course utilizes case studies and specifically emphasizes the necessity to secure and utilize an actual high-rise building to meet the course objectives by conducting high-rise command and general staff simulation activities. Additionally, a facilitated walk through of the high-rise building occurs with a fire protection engineer, and/or building engineer.

4. This course is in alignment with the training necessary for the statewide deployment of Cal OES resources by local government agencies responding to mutual aid high-rise fire incidents.

5. The implementation plan for this new course is in development

CALIFORNIA STATE FIRE TRAINING

Incident Management of High Rise Fires

Course Plan

Course Details

Description: This course provides knowledge, skills, and abilities required for those managing incidents occurring in large, multistory buildings. These incidents may present significant management, logistical, and safety challenges to emergency personnel. The size and complexity of the interior spaces; limited, sometimes arduous access; extended travel and response times; and the concentrated occupant load with egress challenges all contribute to the problems faced by emergency responders. Additionally, most high-rise structures are equipped with various environmental, fire protection, and life-safety systems that require support and control. Successful emergency operations in these types of buildings also require preplanning and technical competence on the part of the emergency responders.

Designed For: Aspiring and incumbent company officers and chief officers

Authority: State Fire Training Company Officer 2D: All-Risk Command Operations for Company Officers

State Fire Training Incident Management of Major Fires

FIRESCOPE ICS 500 Structure Fire Operations

FIRESCOPE ICS 420-1 Field Operations Guide (current edition)

NWCG PMS 461 Incident Response Pocket Guide (current edition)

Prerequisites:

1. Fire Command 2A or Incident Management of Major Fires (FSTEP); and
2. Fire Command 1A or Command 1A or Company Officer 2D: All-Risk Command Operations for Company Officers

Standard: Attend all classes and participate in all activities

Hours: Lecture: 17:30
Activities: 19:30
Testing: 3:00

Hours (Total): 40:00

Maximum Class Size: 30

Instructor Level: Primary instructor

Instructor/Student Ratio: 1:30 Lecture

Skills Evaluator/Student Ratio: 1:15 Simulations/Activities

Restrictions: None

SFT Designation: FSTEP

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Required Resources

Instructor Resources

To teach this course, instructors need:

- State Fire Training Company Officer 2D: All-Risk Command Operations for Company Officers Course Plan
- State Fire Training Incident Management of Major Fires Course Plan
- FIRESCOPE ICS 500 Structure Fire Operations
- FIRESCOPE ICS 420-1 Field Operations Guide (current edition)
- NWCG PMS 461 Incident Response Pocket Guide (current edition)

Instructors may choose to use:

- Firefighting Operations in High-Rise and Standpipe-Equipped Buildings, 2007, by David M. McGrail, Fire Engineering ISBN: 978-1-59370-054-6

Online Instructor Resources

The following instructor resources are available online at http://osfm.fire.ca.gov/training/instructorresources.php:

- 750 Adams, Memphis, Tennessee: https://www.youtube.com/watch?v=CAHCO-1SAfc&app=desktop
- Orie Palmer, FDNY: https://www.youtube.com/watch?v=VGzMnmWYec0
- State Fire Training Company Officer 2D: All-Risk Command Operations for Company Officers Course Plan
- State Fire Training Incident Management of Major Fires Course Plan
- FIRESCOPE ICS 500 Structure Fire Operations
- FIRESCOPE ICS 420-1 Field Operations Guide (current edition)
- NWCG PMS 461 Incident Response Pocket Guide (current edition)
- FIRESCOPE: http://firescope.org/
- ICS-HR-120-1 High-Rise Structure Fire Operational System Description
- ICS-HR-222-1 Lobby Control Unit Leader—High-Rise Incident
- ICS-HR-222-2 Systems Control Unit Leader—High-Rise Incident
- ICS-HR-222-3 Staging Area Manager—High-Rise Incident
- ICS-HR-222-4 Base Manager—High-Rise Incident
- ICS-HR-222-5 Rapid-Ascent Team Leader—High-Rise Incident
- ICS-HR-222-6 Rapid Intervention Group Supervisor—High-Rise Incident
- ICS-HR-222-7 Evacuation Group Supervisor—High-Rise Incident
- ICS-HR-222-8 Ground Support Unit Leader—High-Rise Incident

Student Resources

To participate in this course, students need (if assigned by instructors):

- Firefighting Operations in High-Rise and Standpipe-Equipped Buildings, 2007, by David M. McGrail, Fire Engineering ISBN: 978-1-59370-054-6
- FIRESCOPE ICS 500 Structure Fire Operations
- FIRESCOPE ICS 420-1 Field Operations Guide (current edition)
- NWCG PMS 461 Incident Response Pocket Guide (current edition)
- ICS-HR-120-1 High-Rise Structure Fire Operational System Description
- ICS-HR-222-1 Lobby Control Unit Leader—High-Rise Incident
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- ICS-HR-222-6 Rapid Intervention Group Supervisor—High-Rise Incident
- ICS-HR-222-7 Evacuation Group Supervisor—High-Rise Incident
- ICS-HR-222-8 Ground Support Unit Leader—High-Rise Incident

Facilities, Equipment, and Personnel

The following facilities, equipment, or personnel are required to deliver this course:

Facilities

- Class room
- It is necessary that the instructor secure and utilize an actual high rise building to meet the objectives and conduct the activities of this course. It is highly recommended to utilize this building to conduct the incident command system high rise command and general staff position simulation activities. Additionally, a facilitated walk through of a high rise building should occur with a fire protection engineer, and/or the building engineer.

Equipment

- Any Audio/Visual equipment required
- Any equipment needed to create and conduct simulations, communications equipment, and a mobile/stationary command post
- High rise incident command tactical worksheets and other job aids for position descriptions

Personnel

- Skills Evaluators: in order to maintain a 15:1 Student to Skills Evaluator ratio for simulations/activities
- Guest lecturer(s): fire protection engineer; building engineer; elevator contractor

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Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic, a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, resources, evaluation methods, and participation requirements in the course syllabus.

Enabling Learning Objectives

1. Identify facility requirements
   - Restroom locations
   - Food locations
   - Smoking locations
   - Emergency procedures
2. Identify classroom requirements
   - Start and end times
   - Breaks
   - Electronic device policies
   - Special needs and accommodations
   - Other requirements as applicable
3. Review course syllabus
   - Course objectives
   - Calendar of events
   - Course requirements
   - Student evaluation process
   - Assignments
   - Activities
   - Required student resources
   - Class participation requirements

Discussion Questions

1. To be determined by the instructor

Activities

1. To be determined by the instructor

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Unit 2: Preincident Considerations

Topic 2-1: Identifying Critical Factors and Hazards

Terminal Learning Objective

At the end of this topic, a student, given a high-rise scenario, will be able to identify the critical factors and hazards associated with incidents in high-rise buildings.

Enabling Learning Objectives

1. Describe the benefits of a prefire plan
2. Describe the complexities associated with a high-rise incident
3. List the benefits of frequent high-rise training
4. Describe the logistical and safety challenges to emergency personnel
5. Describe the impact of multiple "false alarm" incidents creating the normalization of deviance

Discussion Questions

1. Discuss the lessons learned from historic high-rise fires.
2. Describe your organization's history of responding to past high-rise incidents.
3. Discuss the barriers to situational awareness in high-rise events and how they impact the emergency responder's technical competence.

Activities

1. It is recommended that the instructor create an activity directing students to identify the dangers of complacency and the improper PPE in a high-rise incident.

Instructor Notes

1. Instructor may choose to base the activity on 750 Adams, Memphis, Tennessee: https://www.youtube.com/watch?v=CAHCO-1SAfc&app=desktop
2. Instructor may choose to base the activity on Orie Palmer, FDNY: https://www.youtube.com/watch?v=VGzMnmWYec0
3. The instructor can refer to NWCG Incident Response Pocket Guide PMS 461 (2014 edition), p. x–xi.

Topic 2-2: Identifying Construction and Fire-Protection Features

Terminal Learning Objective

At the end of this topic, a student, given a high-rise scenario, will be able to identify the construction and fire-protection features based upon the age and occupancy type of a building.

Enabling Learning Objectives

1. Define a high-rise building
2. Describe the different generations/eras of building construction
3. Describe the various design features of high-rise construction
4. Discuss the hazards associated with each generation/era of high-rise construction
5. List common types of fire-protection systems
6. Describe the water systems within the different building construction generations/eras

Discussion Questions

1. How do the Pressure-Reducing Valve (PRV) and restricting orifice plates limit water flow?
2. What are some distinguishing building characteristics based on building age?

Activities

1. It is recommended that the instructor create an activity bringing students to visit high-rise buildings, emphasizing various construction features.

Instructor Notes

1. The last topic of the course plan is an extensive fire and life-safety systems lesson.

Unit 3: Emergency Operations

Topic 3-1: Describing the ICS's Modular Development and Initial Response Roles and Responsibilities

Terminal Learning Objective

At the end of this topic, a student, given a high-rise assignment, will be able to describe the elements of the incident command system's modular development and the roles and responsibilities for initial response.

Enabling Learning Objectives

1. Describe the roles and responsibilities of the initial incident commander
    - The standards/functions of command
2. Describe the deployment of initial responders based on incident priorities
3. Describe initial investigation/attack priorities
4. Describe your agency's policy for establishing:
    - water supply on the initial response
    - personnel accountability
    - lobby
    - staging
    - base

Discussion Questions

1. What are the critical factors in high-rise building fires, including life hazards, building charactersistics and stability, fire behavior, flow path, smoke conditions, and environmental factors?
2. What are the advantages and disadvantages of the different command options (modes of operation)?
    - Investigation
    - Fast attack
    - Command
3. What is your agency's policy on passing command on high-rise incidents?
4. When do you employ two in, two out?
5. How does ALS-BASE serve as a foundation for initial incident management?

6. Discuss the importance of supplying the proper fire department connection.
7. What are the initial functions of lobby prior to the arrival of reinforcements?
8. How does your agency address the effects of wind for the initial attack team?
9. What is your agency policy for taking equipment aloft in the initial response?

Activities

1. It is recommended that the instructor obtain a building and conduct scenario-based assignments.
2. It is recommended that the instructor create audio-visual scenario-based evolutions.
3. It is recommended that the instructor create an activity highlighting wind-driven effects on high-rise fires.

Instructor Notes

1. Refer to the Incident Management of Major Fires course plan and FIRESCOPE ICS 500 Structure Fire Operations for the standards/functions of command.
2. The instructor should consider scenarios that occur in locations other than above ground, such as subdivision(s) and in the lobby.
3. The instructor should consider scenarios that involve different types of high-rise occupancies, including institutional, residential, commercial, office, and different eras/generations.

Topic 3-2: Describing the ICS's Modular Development and Multidivision/Group Response Roles and Responsibilities

Terminal Learning Objective

At the end of this topic, a student, given a high-rise assignment, will be able to describe the elements of the incident command system's modular development and the roles and responsibilities for multidivision/group (reinforced) response.

Enabling Learning Objectives

1. Describe the challenges of maintaining unity of command and span of control in an escalating incident
2. Describe the roles and responsibilities of the incident commander during an escalating incident
    - The standards/functions of command
3. Describe the roles and responsibilties of the incident safety officer
4. Describe the implementation of divisions/groups on an escalating incident
5. Describe the implementation, roles, and responsibilities of:
    - Plans
    - Logistics section chief
        - Ground support
        - Systems control
        - Medical unit
        - Base manager
    - Evacuation group

- RAT: Rapid Ascent Team (established under search or evacuation)
- Search
- Rescue
- Ventilation
- RIC: Rapid Intervention Company/Crew
- Medical group
- Designated facilities
    - ICP
    - Base
    - Staging
- Air operations
- Salvage

Discussion Questions

1. What should a fully functioning staging area look like as reinforcements arrive?
2. How does your agency fulfill safety-officer roles and responsibilities?
3. When would your agency implement an operations section chief during an escalating incident?
4. Discuss the expanding responsibilties of lobby during an escalating incident.
5. Describe lessons learned from case studies about appropriate staffing of your medical group.
6. What are your agency's policies with regards to shelter in place versus evacuation?
7. When would you consider establishing RAT on the initial response?
8. What is your agency's policy on establishing RIC?

Activities

1. It is recommended that the instructor obtain a building and conduct scenario-based assignments for an escalating incident.
2. It is recommended that the instructor create audio-visual scenario-based evolutions for an escalating incident.

Instructor Notes

None

Topic 3-3: Describing the ICS's Modular Development and Multibranch Response Roles and Responsibilities

Terminal Learning Objective

At the end of this topic, a student, given a high-rise assignment, will be able to describe the elements of the incident command system's modular development and the roles and responsibilities for multibranch (extended) response.

Enabling Learning Objectives

1. Describe the implementation, roles, and responsibilties of the liaison officer
2. Describe the implementation, roles, and responsibilties of the public information officer
3. Describe the implementation, roles, and responsibilties of the medical branch director

4. Describe the roles and responsibilties of the assistant safety officers
5. Describe the implementation of branches on an escalating incident
6. Describe the implementation, roles, and responsibilities of:
    - Air operations branch
        - Helicopter coordinator
        - Helispot manager
    - Planning section chief
        - Restat
        - Sitstat
        - Demobilization
        - Documentation
        - Technical specialist
            - Structural engineer
            - Building engineer
    - Logistics
        - Support branch
            - Supply
        - Service branch
            - Communications
            - Responder rehabilitation

Discussion Questions

1. What are the components of the medical branch?
2. What are your staffing contingencies to ensure the appropriate number of resources? (For example, mutual aid and incident management teams.)
3. How has your agency performed mutual aid training to evaluate interagency compatibility?
4. How can technical specialists assist you in mitigation of emergencies? How do you request these resources?
5. How does the AHJ's emergency operations plan address recovery operations?

Activities

1. It is recommended that the instructor obtain a building and conduct scenario-based assignments for an escalating incident.
2. It is recommended that the instructor create audio-visual scenario-based evolutions for an escalating incident.

Instructor Notes

None

Unit 4: Fire and Life-Safety Systems

Topic 4-1: Assessing and Using Fire and Life-Safety Systems

Terminal Learning Objective

At the end of this topic, a student, given a high-rise scenario, will be able to assess and use the fire and life-safety systems based upon the age and occupancy type of the building.

Enabling Learning Objectives

1. Describe the different components that comprise fire and life-safety systems based on the building era/generation, including but not limited to:
    - Standpipe
    - Sprinklers
    - Air handling and smoke removal
    - Doors
    - HVAC
    - Building control station
    - Electrical systems
    - Fire pumps
    - Annunciator panel
    - Lockbox and keys
    - Alarm system
    - Public address system
    - Fire department communication systems
    - Video monitoring
    - Emergency procedures manual
    - Emergency generator
    - Elevators
    - Disability, accessibility, and functional needs for vulnerable populations
    - Refuge area
    - Stairways

Discussion Questions

1. How many personnel does it take to manage systems control?
2. How can you use fire and life-safety systems to assist with evacuation?
3. What is your agency's policy for addressing the different fire and life-safety systems?
4. How integrated is your fire prevention bureau with your fire suppression resources?
5. What is your agency's policy for water supply?
6. How does your agency address disability and special-needs populations and language barriers?
7. What is your agency's policy on the use of elevators?

Activities

1. It is recommended that the instructor create an activity bringing students to visit high-rise buildings, emphasizing fire life-safety systems.

Instructor Notes

1. The instructor should strongly consider having a fire-protection engineer and/or building engineer as a guest lecturer.
2. The instructor should strongly consider having an elevator contractor as a guest lecturer.

Time Table

Segment	Lecture Time	Activity Time	Total Unit Time
Unit 1: Introduction			
Topic 1-1: Orientation and Administration			
Lecture	1:00		
Activity 1-1: To be determined by instructor		0:00	
Unit 1 Totals	**1:00**	**0:00**	**1:00**
Unit 2: Preincident Considerations			
Topic 2-1: Identifying Critical Factors and Hazards			
Lecture	2:00		
Activity 2-1: To be determined by instructor		0:00	
Topic 2-2: Identifying Construction and Fire-Protection Features			
Lecture	4:00		
Activity 2-2: To be determined by instructor		0:00	
Unit 2 Totals	**6:00**	**0:00**	**6:00**
Unit 3: Emergency Operations			
Topic 3-1: Describing the ICS's Modular Development and Initial Response Roles and Responsibilities			
Lecture	1:30		
Activity 3-1: To be determined by instructor		6:30	
Topic 3-2: Describing the ICS's Modular Development and Multidivision/Group Response Roles and Responsibilities			
Lecture	1:30		
Activity 3-2: To be determined by instructor		6:30	
Topic 3-3: Describing the ICS's Modular Development and Multibranch Response Roles and Responsibilities			
Lecture	1:30		
Activity 3-3: To be determined by instructor		6:30	

Segment	Lecture Time	Activity Time	Total Unit Time
Unit 3 Totals	**4:30**	**19:30**	**24:00**
Unit 4: Fire and Life-Safety Systems			
Topic 4-1: Assessing and Using Fire and Life-Safety Systems			
Lecture	6:00		
Activity 4-1: To be determined by instructor		0:00	
Unit 4 Totals	**6:00**	**0:00**	**6:00**
Lecture, Activity, and Unit Totals:	**17:30**	**19:30**	**37:00**

Course Totals

Total Lecture Time (LT)	17:30
Total Activity Time (AT)	19:30
Total Testing Time (TT)	3:00
Total Course Time	**40:00**

Acknowledgments

State Fire Training gratefully acknowledges the following individuals and organizations for their diligent efforts and contributions that made the development and publication of this document possible.

Cadre Leadership

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Partners

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